

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

October 27, 2011

In Reply Refer To: WTR-7

Tim Finlayson, Plant Manager
Lubrizol Advanced Materials, Inc.
3115 Propeller Drive
Paso Robles, California 93446

Re: August 10, 2011 Clean Water Act Inspection

Dear Mr. Finlayson:

Enclosed is the October 27th report for our August 10, 2011 inspection of Lubrizol Advanced Materials. Please submit a short response to the findings in Sections 2 through 5, to EPA, the City of Paso Robles, and the California Regional Water Quality Control Board, by **December 30, 2011**. The main findings are summarized below:

- 1** The Paso Robles permit correctly classified Lubrizol Paso Robles as a non-categorical significant industrial user discharging to one sewer connection, and as a coal tar products manufacturer subject to 40 CFR 414 if the coal tar step discharged to the sewers.
- 2** Treatment on-site is inadequate to achieve compliance with the local limits for salinity, conventional pollutants, zinc, and copper. Potential surfactant slugs from spills and bio-treatment failure pose an added risk of interference at the city sewage treatment plant. Likely upgrades involve clarification, membrane filtration, holding, and source controls. Salinity will be addressed regionally by a new low-hardness municipal water supply.
- 3** Self-monitoring also should add indicator measurements (MBAS monthly, pH daily, EC daily) and flow rate, and account for the blow downs and brines that bypass sampling.

I appreciate your helpfulness extended to me during this inspection. I am available to the City of Paso Robles, and to you to assist in any way. Please do not hesitate to call me at (415) 972-3504 or e-mail at arthur.greg@epa.gov.

Sincerely,

Original signed by:

Greg V. Arthur
CWA Compliance Office

Enclosure

cc: Patti Gwathmey, Industrial Waste Manager, City of Paso Robles
Sorrel Marks, Central Coast RWQCB



U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

CLEAN WATER ACT COMPLIANCE OFFICE

NPDES COMPLIANCE EVALUATION INSPECTION REPORT

Industrial User: Lubrizol Advanced Materials, Inc.
3115 Propeller Drive, Paso Robles, California 93446
Non-Categorical Significant Industrial User

Treatment Works: City of Paso Robles Wastewater Treatment Plant
NPDES Permit No. CA0047953

Pretreatment Program: City of Paso Robles

Date of Inspection: August 10, 2011

Inspection Participants:

US EPA: Greg V. Arthur, Region 9, CWA Compliance Office, (415) 972-3504

Central Coast RWQCB: None.

City of Paso Robles: Patti Gwathmey, Industrial Waste Manager, (805) 227-1654

Paris Precision: Tim Finlayson, Plant Manager, (805) 239-1550
Shawn Lager, Health Safety and Envr Mgr, (805) 239-1550
Vincent Suttmillier, Plant Engineer, (805) 226-3182

Report Prepared By: Greg V. Arthur, Environmental Engineer
October 27, 2011



1.0 Scope and Purpose

On August 10, 2011, EPA and the City of Paso Robles conducted a compliance evaluation inspection of Lubrizol Advanced Materials, Inc., in Paso Robles, California (Lubrizol Paso Robles). The purpose was to ensure compliance with the Federal regulations covering the discharge of non-domestic wastewaters into the sewers. In particular, it was to ensure:

- Classification in the proper Federal categories;
- Application of the correct standards at the correct sampling points;
- Consistent compliance with the standards; and
- Fulfillment of Federal self-monitoring requirements.

Lubrizol Paso Robles **is a significant industrial user ("SIU") within** sewer service areas administered by the City of Paso Robles whose compliance was assessed as part of the 2011 EPA audit of the Paso Robles pretreatment program. The inspection participants are listed on the title page. Arthur conducted the inspection.

See Appendix 1(a) on page 16 for a schematic of the layout and configuration of wastewater handling. Photo documentation of this inspection follows in Section 1.7 on page 6.

1.1 Process Description

Lubrizol Paso Robles manufactures surfactants for shampoos and personal care items. Synthetic anionic surfactants (alkyl sulfates and alkyl ether sulfates) manufacturing involves the alcohol sulfonation of chlorosulfonic acid. Shampoo manufacturing also involves the formulation and blending of a number of other ingredients such builders (carbonates, orthophosphates, aluminosilicates), foam stabilizers (alkanolamides), anti-redeposition agents (carboxy-methylcellulose), conditioning agents (polymers, quaternary salts, silicones), opacifiers (titanium dioxide), humectants (glycol), preservatives (iodopropynyl butylcarbamate, formaldehyde), and additives (extracts, anti-dandruff fungicides, colorants) [1][2][4]. Lubrizol Paso Robles formulates a coal tar additive on-site. EPA did not determine specifically which other ingredients are formulated on-site and which are purchased from outside formulators.

The Lubrizol Paso Robles facility consists of a number of production areas and tank farms for ingredient storage, reaction formulation, blending, product finishing, and product storage. The support operations include tanker truck servicing through washing and steam cleaning, water preconditioning through UV disinfection and softening, and process wastewater collection and treatment. Lubrizol Paso Robles did not allow any photographs of the production areas because of a fire hazard spark potential.

Chemron Corporation constructed the Paso Robles facility and began the production of soaps, detergents, and specialty surfactants in 1981. The Paso Robles facility was purchased by Lubrizol Advanced Materials in 2002. Lubrizol itself was acquired by Berkshire-Hathaway in 2011, but the facility has retained the Lubrizol name.



1.2 Facility SIC Code

Lubrizol Paso Robles is assigned the SIC codes for the manufacturing of shampoos and shaving products from soap or synthetic detergents (SIC 2844).

1.3 Facility Wastewater Sources and Handling

The 2011 Paso Robles permit identifies two discharge points into one sewer connection, designated in this report by permit number as IWD-300.01 and IWD-300.02. A third discharge to the same sewer connection is designated in this report at IWD-300.03.

Wastewater Sources – The production areas and tank farms generate production rinses, production area wash down, plant and equipment wash down, tanker steam cleaning tail waters, tanker clean-out wash down, secondary containment drainage, and outdoor production area storm water run-off. The support operations also generate boiler blow down, cooling tower blow down, and water softener regeneration brines. The production rinses include sulfation rinse waters, sulfation Venturi scrubber tail water, coal tar blending rinses, CBD “can’t be duplicated” single-batch-run production wash down, and other production and secondary rinses.

Delivery – Most process-related wastewaters collect to sumps for pumped delivery to the industrial wastewater treatment plant (“IWTP”).

- Waste Products – Sulfation Venturi scrubber tail water, containing 35% hydrochloric acid, is collected to totes for resale. Coal tar additive rinses through a filter press are reclaimed back into coal tar blending with the filter press solids off-hauled for disposal as hazardous.
- High-Strength Wastewaters – Production tank blending rinses, CBD wash down, and truck tanker clean-out tail waters are collected to totes for off-site hauling.
- Low-Strength Wastewaters – Secondary rinses, plant and equipment wash down, secondary containment drainages, and outdoor production area storm water run-off drain to sumps for hard-piped delivery to the IWTP. Boiler blow down, cooling tower blow down, and water softener brines discharge without treatment.

See Photo #1 in Section 1.7 of this report on page 6. Lubrizol Paso Robles did not allow any other photographs of the wastewater delivery methods from the production areas because of a fire hazard spark potential.

Composition - The production-related wastewaters collected for treatment and discharge to the sewers would be expected to contain alkyl sulfate surfactants, measurable as methylene blue active substances (MBAS), chlorides, sulfates, acidity, and potentially the constituent ingredients including alcohols, chlorosulfonic acid, alkanoaldehydes, glycols, orthophosphates, nitrogen compounds (quaternary salts), fungicides (zinc pyrethrin), dissolved solids (salinity), and cooling tower additives (corrosion inhibitors).



Treatment –The drainage collected to satellite sumps are pump-delivered by hard-piping to the IWTP. Treatment consists of gravity settling, **followed by a 6,000 gallon 'grey'** water tank for holding and in-tank alkalinity adjustment. The grey tank batch feeds two covered **15,000 gallon 'Cytox' aerobic** fixed-film biological treatment units. The Cytox units involve internal honeycomb partitioning, air injection, and peroxide deodorizing, in order to provide a biological mean cell residence time of approximately seven days. According to Lubrizol Paso Robles, the Cytox units metabolize roughly 80-90% of the degradable organic content with influents of 3,000 to 15,000 mg/I-COD treated down to 500 to 800 mg/I-COD for discharge through a final holding tank to the sewers. The Cytox units produce carbon dioxide gas and both sloughed biomass and suspended-growth biomass. The biomass is not removed through a settling or filtering step but rather is flushed periodically to the sewers. Lubrizol Paso Robles bypasses water softener brines, boiler blow down, and cooling tower blowdown around treatment to the sewer. See Photos #2, #3, #4, and #5 in Section 1.7 of this report on page 6.

Discharge – All process wastewaters from Lubrizol Paso Robles drain through a single sewer connection into the Paso Robles domestic sewers. The 2011 Paso Robles permit identifies the IWTP discharge as the final compliance sample point, designated in this report after the permit number as IWD-300.01. The specific location of the compliance sampling point is identified as the final holding tank for the effluent from the Cytox units. The final holding tank discharges through the first of three lines to a vertical standpipe into the domestic sewers. Water softener brines discharge through a second line, identified in the 2011 Paso Robles permit as a second compliance sample point, and designated in this report after the permit number as IWD-300.02. Cooling water and boiler blow downs discharge through a third line, left unidentified in the 2011 Paso Robles permit, but designated in this report at IWD-300.03. The second and third lines into the standpipe sewer connection bypass the Cytox biotreatment units and the associated permitted compliance sampling point, IWD-300.01. See Photo #6 in Section 1.7 of this report on page 6.

Residuals – Waste products and high-strength wastewaters, collected into totes, are hauled off-site for disposal or reclaim. A filter press for coal tar blending produces a filter cake for off-site disposal as non-hazardous.

1.4 Sampling Record

Lubrizol self-monitors monthly as required by the City of Paso Robles permit. There are self-monitoring results begin in January 2011 after the first issuance of the permit on January 13, 2011. The City of Paso Robles does not collect its own samples.

1.5 POTW Legal Authorities

The City of Paso Robles has enacted an ordinance to implement a pretreatment program in the areas serviced by the City's wastewater treatment plants. Under this authority, the City issued City permit No.300 authorizing discharge of non-domestic wastewater to



the sewers. Neither EPA nor the RWQCB have reviewed and issued an approval of the pretreatment program.

1.6 References

[1] "Treatment of Soap and Detergent Industrial Wastes", Yapijakis and Wang, 2006; Chapter 7 of The Handbook of Industrial and Hazardous Wastes Treatment, 2nd Ed. 2006, Taylor and Francis, Marcel Dekker, Inc., New York, NY.

<http://books.google.com> – search: yapijakis wang

[2] "Environmental and Human Safety of Major Surfactants", Vol. 1 - Anionic Surfactants, Part 3 - Alkyl Sulfates, Arthur Little, Inc., February 1991, Cambridge, MA.

http://www.aciscience.org/docs/11_Alkyl_Sulfates.pdf

[3] "Development Document for Effluent Limitations, Guidelines, and New Source Performance Standards for the Soap and Detergent Manufacturing Point Source Category", US EPA 440/1-74/18, December 1973. EPA Publication No. 44017418.

<http://www.epa.gov/nscep/index.html> - search: soap detergent

[4] Lubrizol Personal Care Products, October 2011

<http://www.lubrizol.com/PersonalCare/Products/default.html>

<http://www.lubrizol.com/PersonalCare/Formulation/HairCareShampoos.html>

[5] Organic Chemicals and Plastics and Synthetic Fibers Category Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards, Final Rule, Federal Register, Vol. 52, No. 214, November 5, 1987.



1.7 Photo Documentation

All six photographs taken during this inspection are depicted below and saved as *lubrizol-01-081011.jpg* through *lubrizol-06-081011.jpg*.

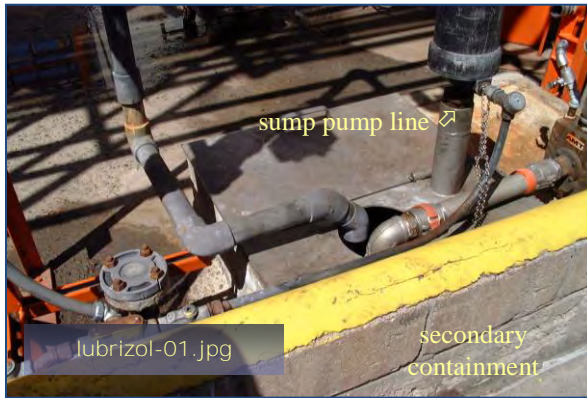


Photo #1: Outdoor Sump for Tank Farm No.5
Taken By: Greg V. Arthur
Date: 08/10/11



Photo #2: IWTP - Gravity Thickening Tank
Taken By: Greg V. Arthur
Date: 08/10/11



Photo #3: IWTP - 'Grey' Water Inlet Surge Tank
Taken By: Greg V. Arthur
Date: 08/10/11



Photo #4: IWTP - Top of Cytox Bioreaction Tanks
Taken By: Greg V. Arthur
Date: 08/10/11



Photo #5: IWTP Final Holding Tank - IWD-300.01
Taken By: Greg V. Arthur
Date: 08/10/11

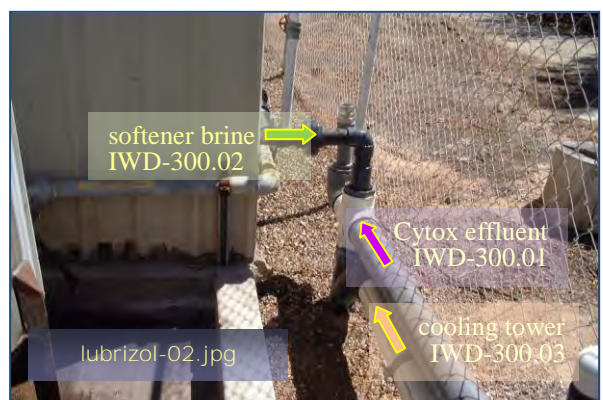


Photo #6: Sewer Discharge Standpipe Connection
Taken By: Greg V. Arthur
Date: 08/10/11



2.0 Sewer Discharge Standards and Limits

Federal categorical pretreatment standards (where they exist), national prohibitions, State groundwater, and the local limits (where they exist) must be applied to the sewer discharges from industrial users. (40 CFR 403.5 and 403.6).

Summary

Lubrizol Paso Robles qualifies as a non-categorical significant industrial user. No Federal categorical pretreatment standards apply to Lubrizol Paso Robles although the national prohibitions do apply. The Federal standards in 40 CFR 414 Subpart G would apply if there were discharges from the on-site coal tar additive production unit. The 2011 Paso Robles permit applies local limits that were technically-based as protective of the Paso Robles WWTP but were not reviewed and approved by either EPA or the RWQCB as part of a formal pretreatment program approval. The 2011 Paso Robles permit applied the local limits, and a zero-discharge prohibition against Federally-regulated wastewaters. The permit did not apply the Federal bypass provision against the bypassing treatment necessary to comply. The application of Federal standards, national prohibitions, and local limits was determined through visual inspection. See Appendix 2 on page 18 of this report for the permit limits.

Requirements

- The permit must apply the Federal bypass provision which prohibits the bypassing of any treatment necessary to comply with Federal standards and local limits.
- The permit must identify the third discharge to the sewer from the cooling towers, designated by EPA as IWD-300.03 in this report.

Recommendations

- Lubrizol Paso Robles should determine the average discharge flow rates for the bio-treated wastewaters (IWD-300.01), the untreated brines (IWD-300.02), and the untreated cooling tower blow downs (IWD-300.03).
- The permit should require self-monitoring for the discharge flow rates.
- Lubrizol Paso Robles should install a single sampling station that receives the contributions from all three wastewater sources discharged to the sewers.
- The permit should require additional self-monitoring for influent BOD, TSS, and TDS, as well as a calculated BOD mass loading removal rate.
- The permit should require additional self-monitoring for effluent MBAS as an indicator of surfactants.



2.1 Classification by Federal Point Source Category

The discharges from Lubrizol Paso Robles do not qualify for regulation under any Federal categorical pretreatment standard in 40 CFR 403-471. However, Lubrizol Paso Robles qualifies as a non-categorical significant industrial user, and would qualify as a coal tar products manufacturer if the coal tar process discharged wastewaters. The 2011 Paso Robles permit appropriately applied a zero-discharge prohibition against the discharge from a Federally-regulated coal tar process.

Significant Industrial User – Lubrizol Paso Robles qualifies as a significant industrial user under the definitions in 40 CFR 403.3 because the discharge flow rates and pollutant loadings are potentially great enough to pose a risk of adversely impacting the city sewage treatment plant. Surfactants at concentrations over 100 mg/l can adversely overload the downstream sewage treatment plant by inhibiting nitrification, increasing turbidity, and inhibiting methanogenesis in anaerobic digestors [2]. Significant industrial users are required to self-report compliance at least twice per year.

Soap and Detergent Manufacturing – Lubrizol Paso Robles does not qualify as a surfactant manufacturer through chlorosulfonic acid sulfonation subject to 40 CFR 417 Subpart M nor as a liquid detergent manufacturer subject to 40 CFR 417 Subpart P. The 1973 Development Document for the Soap and Detergent Point Source Category specifically limits the scope of the category to surfactant manufacturing facilities qualifying under SIC Code 2841. Shampoo manufacturers such as Lubrizol Paso Robles are not covered by 40 CFR 417 since they qualify under SIC Code 2844 [3].

Organic Chemicals Pesticides and Synthetic Fibers – One process at Lubrizol Paso Robles would qualify as bulk organic chemical manufacturing of coal tar products subject to 40 CFR 414 Subpart G, if that process generated a wastewater discharge to the sewers. The Federal rule in 40 CFR 414 specifically extends coverage of the regulation to certain regulated organic chemical formulation processes **that are a "minor portion of and ancillary to the primary production activities ..."** [5]. Lubrizol Paso Robles captures all generated wastes and wastewaters from the coal tar products process, and self-certifies to zero-discharge, as required under the 2011 Paso Robles permit. See Section 1.6 of this report on page 5.

2.2 Local Limits and National Prohibitions

Local limits and the national prohibitions are meant to express the limitations on non-domestic discharges necessary to protect the sewers, treatment plants and their receiving waters from adverse impacts. In particular, they prohibit discharges that can cause the pass-through of pollutants into the receiving waters or into reuse, the operational interference of the sewage treatment works, the contamination of the sewage sludge, sewer worker health and safety risks, fire or explosive risks, and corrosive damage to the sewers. The national prohibitions apply nationwide to all non-domestic sewer discharges. The Paso Robles local limits apply to non-domestic discharges in the service areas of the city wastewater treatment plant.



2.3 Federal Prohibitions

The Federal standards in 40 CFR 403.17(d) prohibit the bypassing of any on-site treatment necessary to comply with standards, respectively. The 2011 Paso Robles permit does not prohibit the bypassing of any treatment necessary to comply.

2.4 Compliance Sampling and Point(s) of Compliance

The permit designates the biotreatment final holding tank and the water softener brine line as the locations of the compliance sampling points (designated in this report as IWD-300.01 and IWD-300.02). The permit does not identify the compliance sampling point for the cooling tower blow downs (designated in this report as IWD-300.03).

Federal Standards - Federal categorical pretreatment standards would only apply if the coal tar additive process generated a wastewater discharge to the sewers. As a result, the 2011 Paso Robles permit establishes a self-certification of zero-discharge as the expression of the Federal standards.

Local Limits - Local limits and the national prohibitions apply end-of-pipe to non-domestic flows. The sample points, IWD-300.01 and IWD-300.02, are largely suitable end-of-pipe sample points representative of most of the day-to-day non-domestic wastewater discharges from Lubrizol Paso Robles. The sample point, IWD-300.03, for cooling tower blow downs has not been established as of yet. A unified sampling structure accommodating all three non-domestic wastewaters lines would provide a better end-of-pipe sample point representative of the day-to-day discharges.

Sampling Protocols - The national prohibitions and local limits are instantaneous-maximums comparable to samples of any length. The 2011 City of Paso Robles permit specifies the sampling protocols by parameter (page 2). See Section 5.0 on page 15 and Appendix 2 on page 18.



3.0 Compliance with Federal Categorical Standards

Industrial users must comply with the Federal categorical pretreatment standards that apply to their process wastewater discharges. 40 CFR 403.6(b).

Categorical industrial users must comply with the prohibition against dilution of the Federally-regulated waste streams as a substitute for treatment. 40 CFR 403.6(d).

Industrial users must comply with the provision restricting the bypass of treatment necessary to comply with any pretreatment standard or requirement. 40 CFR 403.17(d).

Lubrizol Paso Robles achieves consistent compliance with the Federal standards that apply to the coal tar additive formulation strictly through zero-discharge measures. All wastewaters regulated under 40 CFR 414 are collected for reclaim or off-site disposal. The Paso Robles permit requires monthly self-certifications of zero-discharge from the coal tar additive formulation area.

The Federal standards in 40 CFR 403.6(d) prohibit "dilution as a substitute for treatment" in order to prevent compromising model treatment with dilute waste streams. The Federal standards in 40 CFR 403.17 prohibit the bypassing of any on-site treatment necessary to comply with standards unless the bypass was unavoidable to prevent the loss of life, injury, or property damage, and there were no feasible alternatives. Since there is no discharge of any Federally-regulated wastewaters, therefore there can be no dilution as a substitute for treatment, nor any violation of the bypass prohibition.

Requirements

- None.

Recommendations

- None.



4.0 Compliance with Local Limits and National Prohibitions

All non-domestic wastewater discharges to the sewers must comply with local limits and the national prohibitions. 40 CFR 403.5(a,b,d).

Industrial users must comply with the provision restricting the bypass of treatment necessary to comply with any pretreatment standard or requirement. 40 CFR 403.17(d).

The sample record indicates that Lubrizol Paso Robles cannot comply with its local limits for organics or salinity, but generally can for metals, cyanide, and pH. In addition, the potential of an inadvertent release of untreated surfactant-laden wastewaters poses a risk of surfactant interference at the Paso Robles wastewater treatment plant. Salinity issues in San Luis Obispo County stem from the widespread use of water softeners. As a result, Paso Robles and other communities, under a RWQCB Time Schedule Order, are constructing a surface water treatment plant and delivery pipeline for low-hardness water from Lake Nacimiento. The new water supply, expected on-line in 2015, should result in relaxed local limits for salinity. See Appendix 3 on page 20 of this report.

Requirements

- None.

Recommendations

- Clarification and sludge wasting capability should be installed in order to better control the biodegradation of organics in the Cyttox units.
- Membrane filtration (hollow tube UF/RO) could be installed to further remove surfactants, as well as associated sulfates, chlorides, sodium, and other dissolved solids.
- A surge tank large enough to handle over 24 hours of peak flow should be installed to provide (1) a constant feed through any final filtration, and (2) surge protection from an inadvertent release of untreated or partially treated wastewaters.
- The sources of zinc and copper in the process wastewaters should be identified.

4.1 National Objectives

The general pretreatment regulations were promulgated in order to fulfill the national objectives to prevent the introduction of pollutants that:

- (1) cause operational interference with sewage treatment or sludge disposal,
- (2) pass-through sewage treatment into the receiving waters or sludge,
- (3) are in any way incompatible with the sewerage works, or
- (4) do not improve the opportunities to recycle municipal wastewaters and sludge.



This inspection did not include an evaluation of whether achievement of the national objectives in 40 CFR 403.2 have been demonstrated by the Paso Robles wastewater treatment plant through consistent compliance with their sludge and discharge limits.

4.2 Sampling Results

The sample record consists of monthly self-monitoring for pH, conventional pollutants (BOD, TSS, ammonia, and oil and grease), toxics (cadmium, chromium, cobalt, copper, molybdenum, nickel, selenium, zinc, and cyanide), and salinity (TDS, sulfates, sodium, chlorides, and boron). The self-monitoring does not include flow rate results. Paso Robles also does not collect its own samples. The sample record began in January 2011 and covers only the discharges of biotreated wastewaters from the final holding tank through IWD-300.01. There are no sample results for the brines and blow downs from other discharge lines through IWD-300.02 and IWD-300.03.

For the biotreated discharges through IWD-300.01, a determination of consistent compliance cannot be made as of yet because the sample record is not long enough to account for the range of discharge conditions associated with manufacturing a varied product line. Nevertheless, consistent compliance is expected for the pollutants that were always well within the local limits, but is not expected for the rest. In the sample record for IWD-300.01, there were no violations of the local limits for pH, cyanide, oil and grease, cadmium, chromium, cobalt, molybdenum, nickel, and selenium; there were sporadic violations for copper, and zinc; and there were consistent violations far exceeding limits for the parameters representing conventional pollutants and salinity.

4.3 Adequacy of Wastewater Treatment and Disposal

The design and performance of treatment and disposal at Lubrizol Paso Robles is inadequate to consistently comply with local limits. No best-available-technology treatment has been defined by Federal rule for surfactant manufacturing discharges to sewers because anionic surfactants are treatable by sewage treatment plants and salts are not toxic. However, the Federal soap and detergent rule in 40 CFR 417 does define best-available-technology treatment for discharges to waterways from alkyl surfactant manufacturers as secondary biological treatment, with influent equalization, extended aeration, and final clarification, capable of BOD and ammonia removals of 90% or more. In addition, shampoo manufacturing, not water softening, generates the dissolved solids content of the discharge at IWD-300.01, and does so at levels and in flow rates that constrain available treatment technologies to membrane filtration.

Therefore, a specific determination of what constitutes the best-available-technology treatment to meet local limits at Lubrizol Paso Roble would likely involve added secondary clarification for organics biodegradation, Cyttox unit operations in extended aeration mode to nitrify ammonia, membrane filtration removal of dissolved solids, and source controls for zinc and copper. See Appendix 1(b) of this report on page 18 for recommended changes in configuration.



The good aspects of (+) and deficiencies with (-) the existing wastewater treatment and disposal are listed below.

- + High-strength organics-bearing wastewaters are segregated for off-site disposal.
- + All low-strength organics-bearing drainages and produced wastewater discharges are collected and delivered for treatment through the Cyttox biotreatment units.
- + Non-organics-bearing brines and blow downs bypass the Cyttox biotreatment units.
- + Production areas were surrounded by secondary containment.
- + Influent holding allows metered feeds into the Cyttox biotreatment tanks.
- The aerobic Cyttox biotreatment units are not designed to regularly waste solids, thereby hampering control, increasing aeration demand, decreasing treatment capacity, and potentially creating anoxic zones, which can float solids in suspension.
- Batch wasting of solids to the sewers imposes a significant organics mass loading.
- The existing biotreatment units are not designed to remove dissolved solids.
- The lack of final equalization does not attenuate organics mass loading peaks.

4.4 Local Limits for Oxygen Demanding Pollutants and The National Prohibition Against Interference

Metals and Cyanide – For the main discharge from Lubrizol Paso Robles at IWD-300.01, two of five samples exceeded the local limits for two toxic metals, resulting in average concentrations of 2.08 mg/l-zinc and 0.268 mg/l copper. However, these levels convert into mass loadings that are far too small to cause an operational interference of the city sewage treatment plant through the toxic inhibition of the aerobic biodegradation and anaerobic digestion. There were no violations of the local limits for cadmium, chromium, cobalt, lead, molybdenum, nickel, selenium, silver, and cyanide.

High-Strength Organics - The discharge from Lubrizol Paso Robles at IWD-300.01 is not high enough in organics strength to pose a risk of operational interference at the city sewage treatment plant from overloading, because the BOD concentrations are not significantly higher than in domestic sewage. Nevertheless, the organics concentrations consistently have exceeded the Paso Robles permit limits.

Surfactants – The Paso Robles local limits do not set limits for surfactants. However, surfactants in the city sewage treatment plant influent at concentrations over 100 mg/l as MBAS can operationally interfere with treatment. Therefore, a principal potential risk posed by Lubrizol Paso Robles from facility spills or treatment unit failure is surfactant inhibition of the nitrification or anaerobic digestion steps at the city sewage treatment plant [2]. See Section 1.6 of this report on page 5.

Salinity – Sulfates, chlorides, and alkali metals are not inhibitors of sewage treatment plant operations.



4.5 Local Limits for Toxic Metals, Cyanide, Salinity, and Other Pollutants and The National Prohibition Against Pass-Through

Metals and Cyanide – For the main discharge at IWD-300.01, two of five samples exceeded the local limits for two toxic metals, with average concentrations of 2.08 mg/l-zinc and 0.268 mg/l copper. These levels represent loadings that likely are too small to result in the pass-through of pollutants from the Paso Robles wastewater treatment plant to the receiving waters. There were no violations of the local limits for cadmium, chromium, cobalt, lead, molybdenum, nickel, selenium, silver, and cyanide. A possible source of zinc could be wash down and drainage from plant and equipment handling zinc-bearing shampoo additives.

Conventional Pollutants – Pass-through of conventional pollutants cannot occur because the Paso Robles wastewater treatment plant treats for them.

Salinity and Minerals – For the main discharge at IWD-300.01, all samples exceeded the local limits for total dissolved solids, sulfates, and sodium. There are two principal sources of salinity: (1) entrained surfactants and sulfates, generated chlorides, sodium, and other dissolved solids from shampoo formulation, and (2) water softener brines. Removal of dissolved solids from the biotreated wastewaters likely would require some form of membrane filtration such as hollow-tube ultrafiltration, or reverse osmosis. Salinity from softeners should no longer be a water quality issue upon start-up of the low-hardness municipal water supply.

4.6 Local Limits for pH and Sulfides, and The National Prohibitions Against Safety Hazards and Corrosive Damage

Corrosion - Sewer collection system interferences related to the formation of hydrogen sulfide and the resulting acidic disintegration of the sewers are not expected and were not identified or reported by the City. The wastewaters discharged to the sewers are moderate in strength in biodegradable organics. The main discharge through IWD-300.01 does have the potential to exceed pH limits since one of the six measurements registered at 6.32 s.u., significantly below the median measurements of 7.44 s.u. The low outlier reveals the variable nature of the salty and thus heavily buffered discharges. The second and third discharges through IWD-300.02 and IWD-300.03 are insignificant both in organic strength and in volume to affect the pH in the sewers.

Flammability - Flammability would not be expected because sampling shows that the discharges to the sewer would entrain negligible amounts of volatile organics.



5.0 Compliance with Federal Monitoring Requirements

Significant industrial users must self-monitor for all regulated parameters at least twice per year unless the sewerage agency monitors in place of self-monitoring. 40 CFR 403.12(e) & 403.12(g).

Each sample must be representative of the sampling day's operations. Sampling must be representative of the conditions occurring during the reporting period. 40 CFR 403.12(g) and 403.12(h).

Permit Requirements – Lubrizol Paso Roble has successfully fulfilled the self-monitoring requirements set forth in the city permit. The sample record for the main discharge point, IWD-300.01, shows that Lubrizol Paso Robles (1) submitted sample results for all permit-listed parameters at the frequencies set forth in the permit, (2) collected all samples from the designated compliance sampling point, and (3) correctly obtained 24-hour composites for metals and grabs for the other pollutants. It was not determined in this inspection whether appropriate chain-of-custody procedures were followed. There were no sampling requirements in the permit for the second and third discharge points, IWD-300.02 and IWD-300.03. Some of the parameters for pollutants that are not generated could be self-monitored less frequently; indicator pollutants like pH and electrical conductivity should be self-monitored more frequently; and MBAS as a measure of surfactants should be added for self-monitoring.

Representativeness – The sample record is not representative of the discharge to the sewers over both the sampling day and the six-month reporting period because not all process-related wastewaters discharge through the permitted sampling point, IWD-300.01.

Requirements

- See Appendix 2 on page 18 of this report for the self-monitoring and city monitoring requirements for that would be considered to be representative of the discharges.

Recommendations

- All three discharge lines should combine in a common sample box prior to discharge, thereby establishing a single unified compliance sample point.
- EC and pH should be self-monitored daily or even continuously as indicators of treatment performance.
- MBAS should be self-monitored monthly even though there is no local limit, since surfactants can interfere the downstream city sewage treatment plant.



Appendix 1(a)

Lubrizol Paso Robles – Current Configuration and Layout

Sulfation

venturi scrubber tail water
production rinses
tank farm drainage
production area drainage
plant/equipment washdown

Formulation

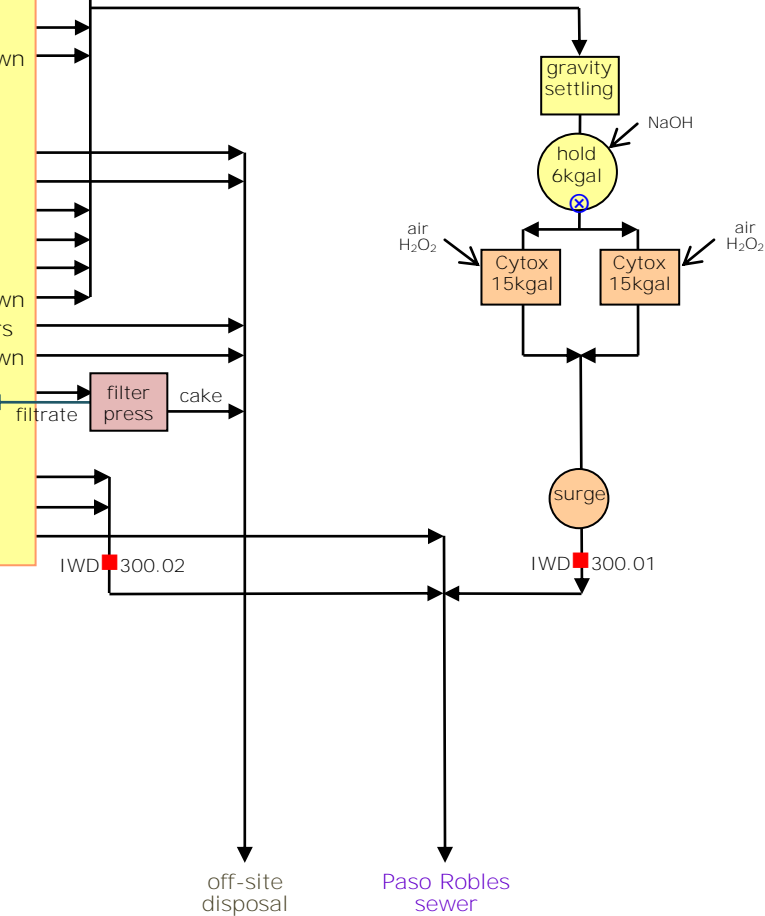
1° production rinses
CBD 1° production rinses
2° production rinses
tank farm drainage
production area drainage
plant/equipment washdown
tanker steam clean waters
tanker clean-out washdown
coal tar additive rinses

Support Operations

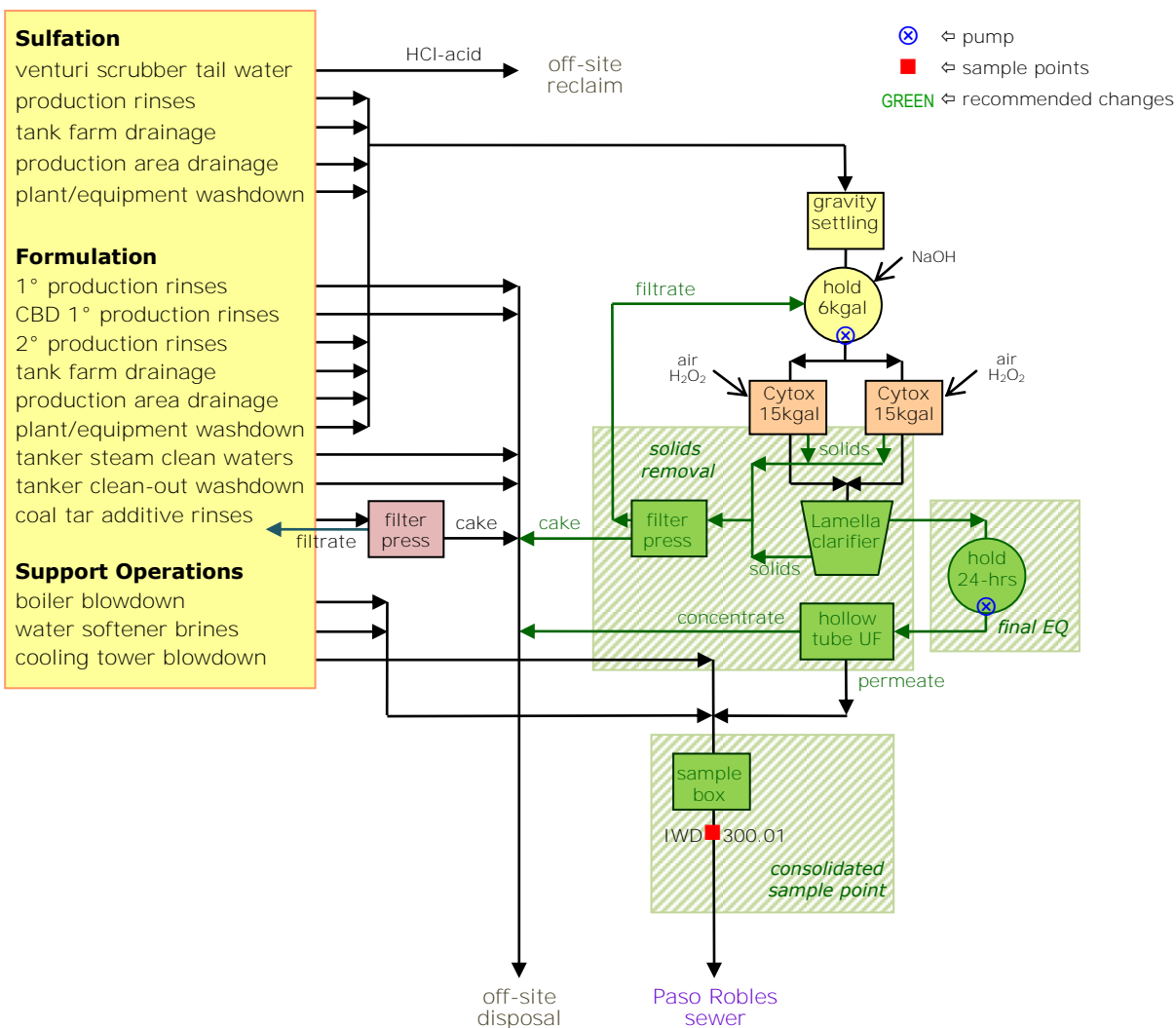
boiler blowdown
water softener brines
cooling tower blowdown

HCl-acid → off-site reclaim

⊗ ⇐ pump
■ ⇐ sample points
GREEN ⇐ recommended changes



Lubrizol Paso Robles - Recommended Configuration and Layout





Appendix 2

Sewer Discharge Standards and Limits for Lubrizol Paso Robles

Pollutants of Concern	Fed stds (d-max)	nat'l pro (instant)	local lim (inst/dmax)	monitoring frequency ①				
				IWD-300.01	IWD-300.02	IWD-300.03	IWTP-inlet	Paso Robles

Toxic Metals and Cyanide

cadmium (mg/l)	-	-	0.10	③	-	-	-	-
chromium (mg/l)	-	-	3.70	③	-	-	-	-
cobalt (mg/l)	-	-	0.075	③	-	-	-	-
copper (mg/l)	-	-	0.30	1/month	-	-	-	1/year
molybdenum (mg/l)	-	-	1.10	2/year	-	2/year	-	1/year ④
nickel (mg/l)	-	-	1.90	③	-	-	-	-
selenium (mg/l)	-	-	0.27	2/year	-	2/year	-	1/year ④
zinc (mg/l)	-	-	4.00	1/month	-	-	-	1/year
total cyanide (mg/l)	-	-	0.01	③	-	-	-	-

Conventional Pollutants and Parameters

pH (s.u.)	-	<5.0	6.0-9.0	1/day	1/month	1/month	-	1/year
flow rate (gpd)	-	-	-	1/day	1/month	1/month	-	-
BOD (mg/l)	-	-	360	1/month	-	-	1/month	1/year
BOD Removal (%)	-	-	-	1/month	-	-	1/month	-
TSS (mg/l)	-	-	360	1/month	-	-	1/month	1/year
ammonia (mg/l)	-	-	20.0	1/month	-	-	1/month	1/year
oil & grease (mg/l)	-	-	100	2/year	-	2/year	-	1/year ④
temperature (°F)	-	-	150°F	③	-	-	-	-
explosivity	-	<140°F ②	<140°F ②	③	-	-	-	-

Dissolved Salts and Surfactants

EC (µmhos/cm)	-	-	-	1/day	1/month	1/month	1/month	1/year
TDS (mg/l)	-	-	1000	1/month	1/month	1/month	1/month	1/year
MBAS (mg/l)	-	-	-	1/month	-	-	1/month	1/year
boron (mg/l)	-	-	5.0	③	-	-	-	-
chloride (mg/l)	-	-	150	1/month	1/month	1/month	-	1/year
sodium (mg/l)	-	-	200	1/month	1/month	1/month	-	1/year
sulfate (mg/l)	-	-	200	1/month	1/month	1/month	1/month	1/year

① Recommended **reductions in green**. Recommended **increases in RED**.

② Closed-cup flashpoint.

③ As part of periodic priority pollutant scans in order to identify changes in discharge quality.

④ Twice -per year city monitoring could replace two self-monitoring samples per year.



Appendix 3

Wastewater Discharge Quality for Lubrizol Paso Robles

pollutants	sampling results @ IWD-300.01 for 2011						statistics			viols
	1/27/11	2/17/11	3/11/11	4/21/11	5/12/11	6/23/11	μ_{mean}	σ_{n-1}	Z99%	d-max
Toxic Metals and Cyanide										
cadmium (mg/l)	<0.005	<0.005	<0.005	-	-	-	<0.005	-	<0.005	0/3
chromium (mg/l)	0.08	0.09	0.05	-	-	-	0.073	0.021	0.122	0/3
cobalt (mg/l)	<0.01	<0.01	<0.01	-	-	-	<0.01	-	<0.01	0/3
copper (mg/l)	0.42	0.36	0.14	0.24	-	0.18	0.268	0.119	0.545	2/5
molybdenum (mg/l)	0.06	0.08	0.02	0.03	-	0.04	0.046	0.024	0.102	0/5
nickel (mg/l)	0.06	0.06	0.04	0.02	-	0.06	0.048	0.018	0.090	0/5
selenium (mg/l)	0.01	<0.01	<0.01	-	-	-	0.008	0.002	0.012	0/3
zinc (mg/l)	4.17	3.55	0.02	1.46	-	1.18	2.08	1.73	6.11	1/5
total cyanide (mg/l)	<0.004	<0.004	<0.004	<0.004	-	<0.004	<0.004	-	<0.004	0/5
Conventional Pollutants and Parameters										
pH (s.u.)	7.32	7.6	7.48	7.45	6.32	7.43	7.44 _{med}	6.32 _{min} - 7.60 _{max}		0/6
flow rate (gpd)	-	-	-	-	-	-	-	-	-	-
BOD (mg/l)	362	671	587	1040	1220	793	779	312	1505	6/6
TSS (mg/l)	3600	2900	1100	900	-	250	1750	1427	5074	4/5
ammonia (mg/l)	18.7	23.1	2.3	5.7	-	28.7	15.7	11.3	42.1	2/5
oil and grease (mg/l)	10	18	9	6	-	-	10.8	5.1	22.7	0/4
temperature (°C)	19.0	25.0	21.7	23.6	23.5	28.4	23.5	2.9	30.2	0/6
explosivity	-	-	-	-	-	-	-	-	-	-
Dissolved Salts and Surfactants										
EC (µmhos/cm)	-	-	-	-	-	-	-	-	-	-
TDS (mg/l)	4610	6440	4620	4150	5720	5720	5210	879	7258	6/6
MBAS (mg/l)	-	-	-	-	-	-	-	-	-	-
boron (mg/l)	0.4	0.5	0.3	-	-	-	0.40	0.10	0.63	0/3
chloride (mg/l)	1230	2030	760	420	510	540	915	619	2357	6/6
sodium (mg/l)	1140	1720	1210	888	941	1270	1195	298	1889	6/6
sulfate (mg/l)	1010	1100	1620	980	2090	1310	1352	433	2360	6/6
Violations of Local Limits in RED.							Total days of violation ...			39